[xx] **Author:** New York City Department of Finance, New York City Department of Health and Mental Hygiene, New York City Department of Small Business Services, New York City Economic Development Corporation. Title: "The State of Smoke-free New York City: a One-year Review." New York, NY: New York City Department of Health and Mental Hygiene.
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# THE STATE OF SMOKE-FREE NEW YORK CITY: A ONE-YEAR REVIEW


*New York City Department of Finance*
*New York City Department of Health & Mental Hygiene*
*New York City Department of Small Business Services*
*New York City Economic Development Corporation*

**MARCH 2004**

# EXECUTIVE SUMMARY

When the Smoke-Free Air Act went into effect on March 30, 2003, questions were raised about how the law would affect the City's restaurants and bars. Would the law hurt business? Would some establishments have to lay off workers or close?

**One year later, the data are clear. The City's bar and restaurant industry is thriving and its workers are breathing cleaner, safer air.**

Since the law went into effect, business receipts for restaurants and bars have increased, employment has risen, virtually all establishments are complying with the law, and the number of new liquor licenses issued has increased—all signs that New York City bars and restaurants are prospering. The vast majority of New Yorkers support the law and say they are more likely to patronize bars and restaurants now that they are smoke-free. And, most importantly, the health of all New Yorkers, customers and workers alike, is now protected from the harmful health effects of second-hand smoke.

The data show that:

- **Business tax receipts in restaurants and bars are up 8.7%;**
- **Employment in restaurants and bars has increased by 10,600 jobs (about 2,800 seasonally adjusted jobs) since the law's enactment;**
- **97% of restaurants and bars are smoke-free;**
- **New Yorkers overwhelmingly support the law;**
- **Air quality in bars and restaurants has improved dramatically;**
- **Levels of cotinine, a by-product of tobacco, decreased by 85% in nonsmoking workers in bars and restaurants; and**
- **150,000 fewer New Yorkers are exposed to second-hand smoke on the job.**

While this report focuses largely on the economic impact, if any, that the Smoke-Free Air Act has had on the food and beverage industry, it is important to keep in mind the primary intent of the law: to protect workers from exposure to second-hand smoke. Just 30 minutes of exposure to second-hand smoke produces some of the same physical reactions that occur due to long-term smoking, and can increase the risk of heart attacks in non-smokers. Now, because of the passage of the Smoke-Free Air Act, workers and patrons of the City's bars and restaurants are breathing cleaner, safer air every day.

The report is divided into 8 sections:

1. Bar and restaurant tax receipts
2. Bar and restaurant employment
3. Bar and restaurant openings and closings
4. Compliance with the Smoke-Free Air Act
5. Public opinion
6. Workplace air quality
7. Worker protection
8. The State of a Smoke-Free City

## I. Bar and Restaurant Tax Receipts in a Smoke-free City

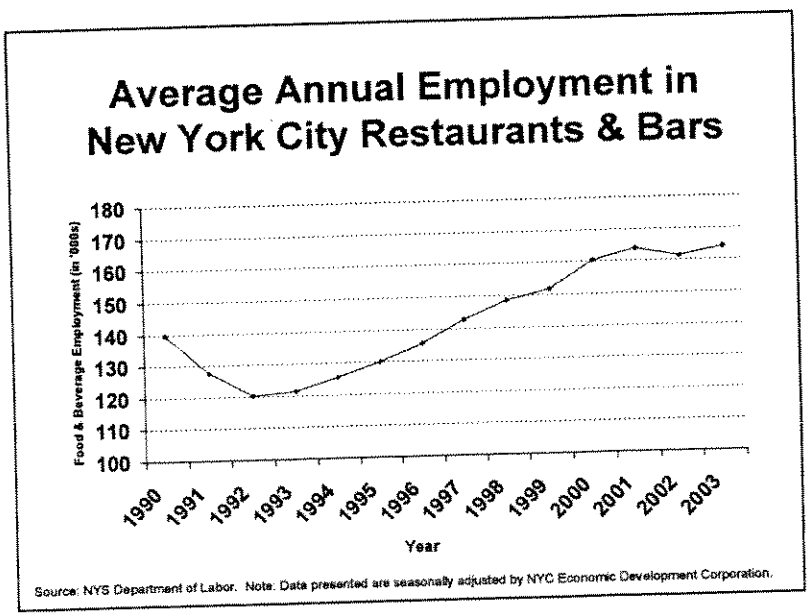
Data from the New York City Department of Finance show that the amount of money spent in New York City's bars and restaurants has increased over the past year.

From April 1, 2003, through January 31, 2004—the most recent data available—bar and restaurant business tax receipts were up 8.7% from the same period in 2002-2003. From April 2003 through January 2004, the City collected $17,375,688 in tax receipts from bars and restaurants; in the same period one year previously, the City collected $15,984,811.

## II. Bar and Restaurant Employment in a Smoke-free City

New York City's improved financial climate has translated into employment gains for the bar and restaurant industry. Now, as a result of the Smoke-Free Air Act, these workers can also enjoy a safer, smoke-free workplace.

Employment data from the New York State Department of Labor, and seasonally adjusted by the New York City Economic Development Corporation, show that the City's restaurant and bar industry is expanding once again after a downturn at the end of 2001 and throughout 2002 (prior to the implementation of the Smoke-Free Air Act). More people are employed in the City's bars and restaurants with an average number of workers employed in the industry during 2003 of 164,000, the highest number recorded in at least a decade.

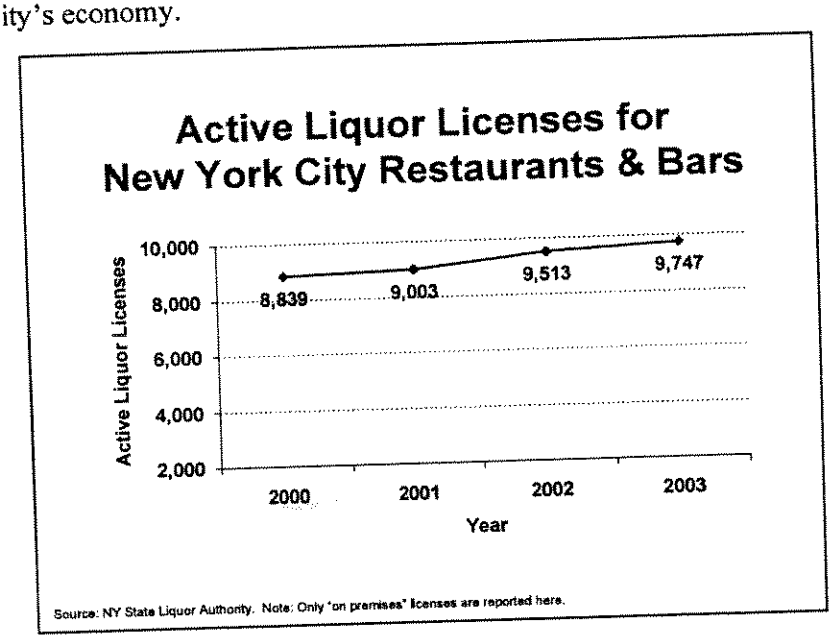



In the months following the law's enactment from March 2003 to December 2003, employment in New York City's restaurants and bars increased by about 2,800 seasonally adjusted jobs, amounting to an absolute gain of about 10,600 jobs.

## III. Bar and Restaurant Openings and Closings in a Smoke-Free City

According to the New York State Department of Labor, the number of New York City bars and restaurants remained essentially unchanged between the third quarter of 2002 and the third quarter of 2003. This is an improvement compared with the same period in 2002, during which 280 more bars and restaurants closed than opened.

Furthermore, the New York State Liquor Authority issued 1,416 new liquor licenses to New York City bars and restaurants in 2003, compared with 1,361 issued in 2002, prior to the passage of the Smoke-Free Air Act. Citywide, at the end of 2003, there were 9,747 active liquor licenses—a net gain of 234 from 2002. Bar and restaurant owners as well as investors remain confident in the strength of the industry and of their ability to flourish in this vibrant and varied sector of the City's economy.




## IV. Compliance with the Smoke-Free Air Act

The overwhelming majority of City bars and restaurants are now smoke-free. The New York City Health Department inspected more than 22,000 establishments from April 2003 to February 2004. Of those inspected, 97% were smoke-free—no patrons or workers were observed smoking, no ashtrays were present, and "No Smoking" signs were properly posted.

**Compliance with the Smoke-Free Air Act, April 2003 – February 2004**

| | All Food Service Establishments |
|---|---|
| **Establishments inspected** | 22,003 |
| **Establishments cited for violation 15L only** | 2,219 |
| **Establishments cited for SFAA violations other than 15L** | 670 |
| **% smoke-free establishments** | **97%** |

Note: Violation 15L—failure to adequately post a smoke-free workplace policy—is considered a minor violation.

## V. Public Opinion and Bar & Restaurant Attendance in a Smoke-Free City

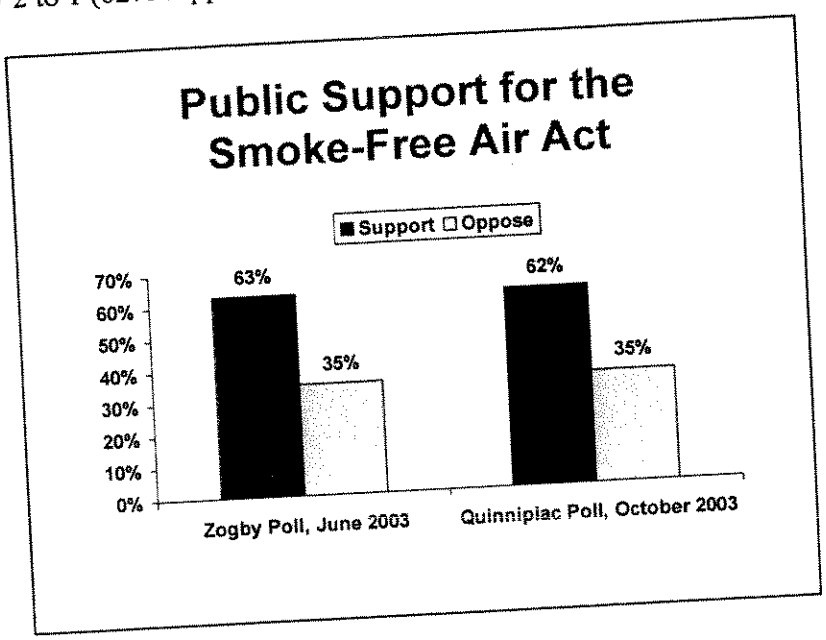
New liquor licenses, employment growth, and increased tax receipts in the bar and restaurant sector all point to one conclusion: after a difficult 2001 and 2002, more people are spending more money in New York's bars and restaurants, and the City's protection of workers has not stopped this progress.

The overwhelming support of New Yorkers for the Smoke-Free Air Act suggests that the law did not hurt, and might even have helped, the bar and restaurant industry. In public surveys, New Yorkers consistently voice approval for smoke-free establishments.

Approval of the Law

- A poll conducted by Zogby International in June 2003 of voters throughout New York State showed that 63% of New Yorkers approved of the state Clean Indoor Air Act (CIAA), compared with 35% who opposed it. The poll showed even more support for the smoke-free law among New York City voters, with 69% supporting the law.

- A poll conducted by Quinnipiac University in October 2003 of New York City voters found that New Yorkers overwhelmingly supported the Smoke-Free Air Act by a margin of nearly 2 to 1 (62% supported vs. 35% opposed).




Going to Smoke-Free Bars and Restaurants

- 16% of respondents to the Zogby poll said they would patronize smoke-free restaurants on a *more* regular basis after passage of the law, and 73% said they would go out to eat just as often as before. Only 11% said they would go to restaurants less as a result of the law.

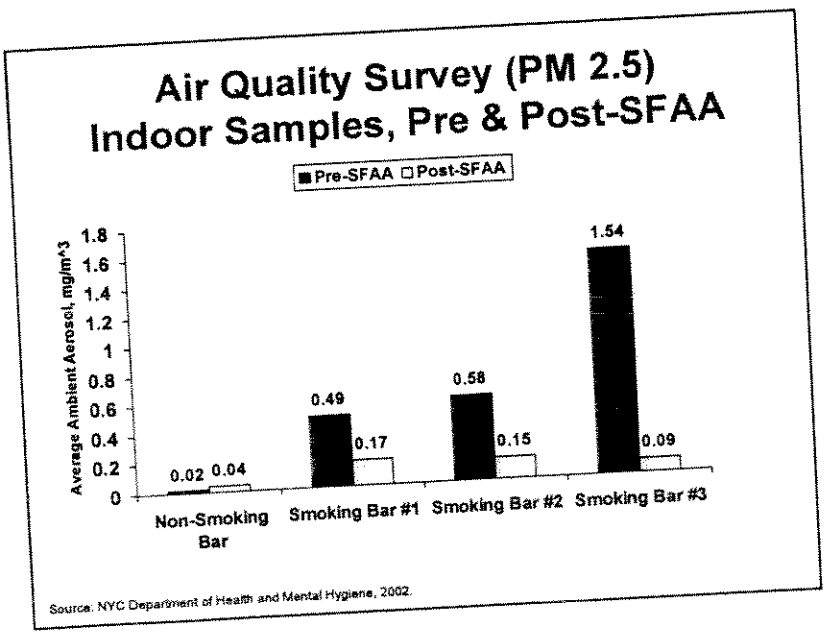
- 19% of respondents to the Zogby poll said they would patronize bars and nightclubs *more* often after passage of the law, and 65% said they would go out just as often as before. Only 14% said they would go to bars and nightclubs less.

- 23% of those who participated in the Zagat 2004 New York City survey said they would patronize smoke-free restaurants on a *more* regular basis after passage of the law, and 73% said they would go out to eat just as often as before. Only 4% said they would go to restaurants less as a result of the law.

## VI. Workplace Air Quality in a Smoke-Free City

The high rate of compliance to the Smoke-Free Air Act translates into better air quality in workplaces. The Health Department conducted an air quality survey of various indoor and outdoor locations throughout the City in August 2002, prior to the implementation of the Smoke-Free Air Act. The Department found that the average air pollution levels in bars that permitted smoking were as much as 50 times higher than at the entrance to the Holland Tunnel at rush hour.

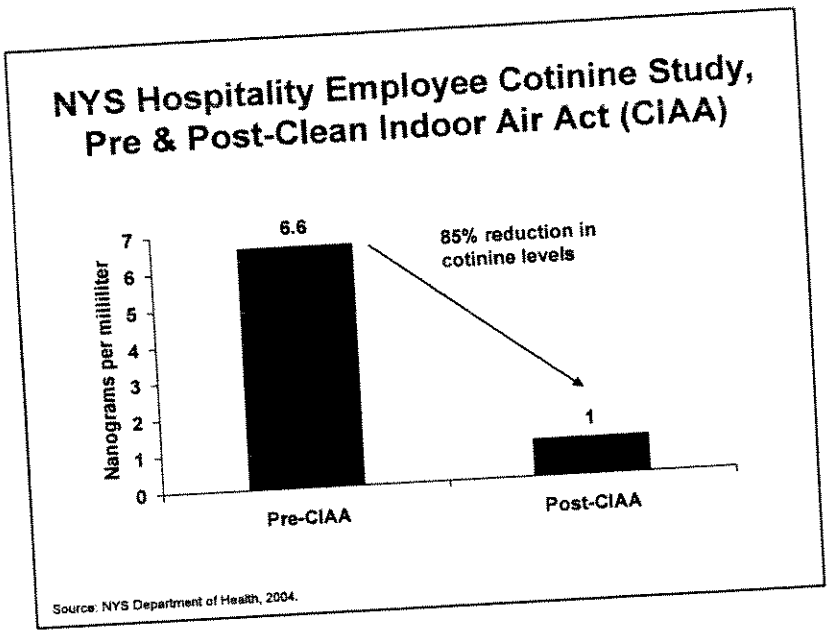
The Department returned to the same locations in May 2003, after the Smoke-Free Air Act went into effect, and documented substantial improvements in air quality. The follow-up samples showed, on average, a six-fold reduction in air pollution levels in establishments that previously allowed smoking.



## VII. Worker Protection in a Smoke-Free City

Within a short period after the implementation of the Smoke-Free Air Act, 150,000 fewer adult New Yorkers reported being exposed to second-hand smoke at work.

A New York State Department of Health study confirms the reduction in second-hand smoke exposure at work by documenting a marked decrease in cotinine in New York bar and restaurant workers. Cotinine, a nicotine by-product, is found in people who have inhaled tobacco smoke, and is used to determine nonsmokers' exposure to second-hand smoke. Researchers collected biological samples from nonsmoking bar and restaurant employees during the month before the New York State Clean Indoor Air Act (CIAA) went into effect in July 2003, and again three months later. They found that cotinine levels declined by 85% after the state law went into effect.




## VIII. The State of a Smoke-Free City

As New York City, home of the world's finest restaurants and most celebrated nightlife, emerges from the difficult economic times of 2001 and 2002, so has its bar and restaurant industry. Economic data confirm that New Yorkers love their bars and restaurants, and so do the millions of tourists that come here every year to enjoy all that the City has to offer. Thanks to the Smoke-Free Air Act, the City's bar and restaurant experience is a safer and healthier one for everyone.

[xxi] **Author:** Dresser, Laura, Tobacco-Free Wisconsin Coalition.
**Title:** "Clearing the Air: The Effect of Smokefree Ordinances on Restaurant Revenues in Dane County."
**Year:** (1999):
**Page:** 2-3.

# Clearing the Air:
## The Effect of Smokefree Ordinances on Restaurant Revenues in Dane County

January 1999
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*A Note to the Reader:*

*Secondhand smoke is more than a simple irritant, annoyance, or inconvenience. In fact, it is a well-documented public health hazard. However, despite fairly high levels of secondhand smoke in restaurants and other confined public spaces, there is often disagreement about the health necessity and economic impact of reducing individual exposure to these dangerous substances. Unfortunately, despite the fact that the health consequences are well established (even the tobacco industry seems on the brink of admitting that it may be a problem 1), proponents of the status quo argue that economic effects of a smokefree ordinance are too dire to eliminate this health hazard. Just that happened here in Dane County, when opponents of smokefree ordinances argued that the restaurant industry in Madison would be devastated by the ordinance passed in 1992.*

*The purpose of this independent study is to explore the validity of claims about the negative economic effects of smoking bans on restaurants. The analyses here do not support the assertion that smokefree ordinances produce negative economic effects.* ***In fact, this study shows strong revenue growth for Dane County's restaurant industry since the passage of ordinances, stronger than the growth posted in the rest of the state over the same period.***

*Most importantly, the positive health effects of such ordinances could not be clearer. Secondhand smoke is one of the leading causes of preventable death in this country. It also makes many people seriously ill. Exposure to secondhand smoke is a leading cause of heart disease, asthma, cancer and allergies. Tobacco smoke contains more than 4,000 chemicals, including 43 known carcinogens. Secondhand smoke contains arsenic, cyanide, formaldehyde, carbon monoxide, and tar. As a result, secondhand smoke also presents an occupational hazard for restaurant staff: due to long-term exposure to secondhand smoke, waitresses have four times the national rate of lung cancer.*

*Secondhand smoke in enclosed spaces is especially dangerous. Smoke filled rooms can have up to six times the air pollution of a busy highway. Because ventilation systems are built for the elimination of smoke as an irritant instead of a health hazard, many of the most harmful pollutants in tobacco smoke are not eliminated. Indeed, secondhand smoke does not quickly clear from a room. It takes about two weeks for nicotine to clear from a room where smoking has occurred.*

*At the same time, the notion that a separate "smoking section" provides protection to nonsmokers has been proven in dozens of studies to be false. Simply, the smoke does not remain in the smoking section.*

*Secondhand smoke is a public health hazard. But are smokefree ordinances an economic hazard? The answer to this question is important enough that the Tobacco-Free Wisconsin*

*Coalition commissioned this independent study of the economic effects of Dane County's smokefree ordinances on the area's restaurants. The study actually finds good news for Dane County restaurants, even as we improve public health. We hope that policy makers will look to these data whenever doomsday threats surface in debates on the merits of smokefree ordinances for restaurants.*

*David Ahrens*
*Executive Director,*
*Tobacco-Free Wisconsin Coalition*

1 In a July 22 interview on the Lehrer News Hour RJR Tobacco Vice President and Counsel, Charles Blixt, stated: "It's not our position that secondhand smoke is not harmful."

# Clearing the Air: The Effect of Smokefree Ordinances on Restaurant Revenues in Dane County

In response to the health problems stemming from secondhand smoke in public places, the Madison Common Council voted in October 1992 to make all restaurants smokefree. (The ordinance applied to dining establishments where less than one-third of the establishment's receipts were from the sale of alcoholic beverages.) Despite the fact that the ordinance allowed a staggered implementation date of July 1, 1993 for 60 percent smokefree dining and July 1, 1994 for 90 percent smokefree dining, many restaurants were smokefree by January, 1993 and virtually all were smoke free by July 1, 1993. Subsequent to passage of the Madison ordinance, the Village of Shorewood and the City of Middleton, municipalities contiguous to Madison, passed identical ordinances. At the time these ordinances were passed, opponents offered dire predictions about their effect on the area's restaurant industry. In fact, they projected revenue losses of 30 percent at area restaurants due to the new clean-air standards. This level of revenue loss would be devastating in Dane County's highly competitive restaurant industry. Few restaurants have the margin to survive a 30 percent decline in sales. Such severe revenue losses would bankrupt many restaurants and halt the development and expansion of new restaurants. The findings of this study show that these dire predictions never materialized.

## Summary of Findings

In this paper, restaurant revenue data from the Wisconsin Department of Revenue are analyzed to investigate the effect of the ordinances on the restaurant industry. We compare restaurant revenue trends from 1992 to 1997 for the area affected by the ordinances to those posted by the rest of the state. Finally, we control for Dane County's strong population and income growth to ensure that these variables do not account for the revenue trends that we document.

We find no evidence to support the claims of the ordinance's opponents that the clean air ordinance would have devastating effects on the area's restaurants. If anything, Dane County's restaurants appear to be doing better than those in the rest of the state:

- *From 1992 to 1997, revenue of Dane County restaurants grew 24 percent, compared to a 19 percent increase over the same period in the rest of the*

*state.*

*Clearing the Air, 2*

• *From 1992 to 1997, per capita restaurant expenditures grew 16 percent in Dane County, compared to the 14.2 percent per capita restaurant expenditure growth rate for the state.*

While Dane County's strong population growth partially accounts for the strong growth in restaurant revenues, it is not the whole story. In fact, per capita restaurant expenditures in the county exceed the rest of the state's — in Dane County diners spent the equivalent of $1084 for each county resident in 1997 compared to per capita expenditures of $806 in the rest of Wisconsin. Not only were per capita expenditures higher in Dane County, but also over 1992-97, per capita restaurant expenditures in the County grew faster.

• *From 1992 to 1997, restaurant expenditures as a share of total expenditures fell from 9 to 8 percent in both Dane County and the state.*

Dane County has experienced strong income growth and that too partially accounts for the documented increases in Dane County restaurant revenues. To control for increasing income, we investigate the trend in restaurant expenditures as a share of total taxable expenditures. Because total expenditures rise as income rises, this method accounts for increasing income in the county. In fact, there is a very slight decline in restaurants' share of total taxable receipts from 1992-97 from 9 to 8 percent, but that decline occurred both in the state and Dane County. Ordinances thus cannot be blamed for this very small drop in restaurants' share of total expenditures.

• *From 1991 to 1996, employment in eating and drinking establishments in the city of Madison grew by 1166 employees, among the strongest increases posted by Madison industries, showing the economic strength of restaurants within Madison.*

• *From 1993 to 1997, the number of smokefree restaurants in areas of Dane County not covered by a smokefree ordinance grew from 4 to 89, suggesting that smokefree status offers a competitive advantage to restaurants.*

The bottom line? We find no support for the dire predictions of those who opposed the smokefree ordinances. At a minimum, the ordinances do not appear to have hurt the restaurant industry at all. In fact, some measures suggest that the smokefree ordinances have been good for Dane County's restaurants.

*Clearing the Air, 3*

## Predicting the Effect of Clean Air Ordinances on Restaurant Revenues

This investigation requires clarification of the claims by those who suggested that the smokefree ordinances would have a dramatic and negative effect on eating out. Basic economics helps provide the clarification and suggest the best means for analyzing the actual effects of the ordinance.

Most are already familiar with the basic economic model: when the price of a

good increases, the demand for it will generally decline as people seek out less costly alternatives. "Price" here can include actual dollars or non-monetary costs (think of your own demand for a good when confronted with a long line or unpleasant surroundings) paid by the purchasers of a good or service.

In economic terms, those who opposed the ordinances claimed that the ban on smoking in restaurants would raise the cost of eating out — not in actual dollar terms, but by making the experience of dining out less attractive to a large number of people. Confronted by a less attractive world for dining out those who would have dined out seek alternatives — eating at home and/or driving further to get to restaurants not covered by the ordinance. Their argument also presumes either that smokers cannot wait to smoke until leaving a restaurant, or that in many instances smokers go to restaurants to smoke rather than eat and thus, denied the opportunity to smoke, chose to not to eat.

Of course, there is no reason to expect that people, smokers and non-smokers alike, will all negatively respond to the enactment of the ordinance. In fact, while the ordinance is an inconvenience to some diners (namely, those who smoke at meals) it is a convenience to other diners (namely, those who prefer smokefree environments).

A predicted negative effect on restaurant revenues of the ordinance presumes that the ordinance makes dining out less attractive *on net*. The significant negative effect predicted by those who opposed the ordinance would require that substantially more people responded to the ordinance by seeking substitutes (thus treating "smokefree" as a cost) than those who respond to the ordinance by eating out more frequently. This is obviously a fairly unrealistic assumption given that the vast majority of diners are, in fact, non-smokers. For them the ordinance seems most likely to improve the atmosphere at restaurants.

In this study we use the best available data on restaurant revenues to investigate its effect on restaurant revenues.



## National Evidence on Clean Air Ordinances

Throughout the country, the tobacco lobby and its surrogates have argued that smokefree restaurant ordinances will lead to devastating declines in the restaurant industry. They generally project a 30 percent decline in sales.

In every instance when reliable and representative data has been subject to analysis, the evidence of negative effects on restaurant revenues evaporates. The most comprehensive of these studies, published in the American Journal of Public Health, examined restaurant revenue data from fifteen cities with smokefree ordinances (as well as a comparison group of 15 non-ordinance cities) and found no evidence that ordinances affected restaurant sales.[2]

## Method and Data

The most complete analyses of the effect of ordinances rely on state sales tax data. Such data is objective and comes from all possible reporting units (all restaurants are subject to state taxes and all provide data to the state on their total taxable receipts); there is neither sample nor reporting bias in the data. These state data provide a complete statement of the size of the restaurant

industry that is geographically specific and consistently measured over time. Trends in total restaurant revenues provide an interesting but incomplete picture, however, because total restaurant revenues could change over time due to population or income changes as well as to an ordinance. One means of controlling for population growth is to look at trends in restaurant expenditures per capita. The ratio of restaurant sales as a fraction of total retail sales controls for both population and income growth in a community. Throughout these analyses, it is critical to compare trends in the ordinance area with trends in non-ordinance areas. Obviously, a societal decline in restaurant sales (imagine what happens to restaurant sales during recessions) shouldn't be attributed to the passage of an ordinance. A comparison of nonordinance areas to those with them controls for secular trends unrelated to the enactment of smokefree ordinances.

This study follows on the previous literature in the field, utilizing the best data available to document the effect of the ordinance on restaurant revenues in

[2] The study of 15 cities is Glantz and Smith, "The Effect of Ordinances Requiring Smokefree Restaurant on Restaurant Sales" (American Journal of Public Health, 1994; 84:1081-85). Looking at 19 California cities with smoke free ordinances, Maroney, Sherwood, and Stubblebine (*The Impact of Tobacco Control Ordinances on Restaurant Revenues in California,* The Claremont Institute for Economic Policy Studies, January 1994) also find no effect of the ordinances on restaurant revenues.



Madison, Middleton, and Shorewood Village. This study compares preordinance and post-ordinance data on restaurant revenues for Dane County and the rest of the state of Wisconsin. The ordinance was passed in 1993. Thus, 1992 provides baseline statistics and 1997 is the most recent available data on revenues. We compare Dane County trends to trends for the state's restaurant industry to investigate whether the ordinances passed in Dane County had an effect on our restaurant industry.

***Restaurant Revenue Data***

The State Department of Revenue is the source of the most important data for this study. They collect data on the total value of taxable receipts for the state and each county in it. They also report total taxable receipts for all major industrial divisions. To investigate trends in restaurant revenues, we use data on total taxable receipts reported for "eating and drinking" establishments in Dane County and the state of Wisconsin. We use data from before and after the enactment of the ordinance, specifically 1992 and 1997. The share of total expenditures spent in restaurants (again for Dane County and the state in 1992 and 1997) is also calculated. This ratio controls for income growth over the period of study.

***Population Data***

Dane County has experienced strong growth relative to the state population. In order to control for effects of increasing population, we use population data from the State Department of Workforce Development to calculate trends in per capita restaurant revenues.

***Data Limitations***

The best data for this study would offer the above variables on *municipal* basis to allow for comparison of trends in restaurant revenues for ordinance and

non-ordinance cities. Unfortunately, however, the state revenue data required for this analysis is not available on a municipal basis; the smallest geographic unit available is the county. For this reason, we analyze trend in restaurant revenues in the Dane County.

While imperfect, Dane County is still a reasonable geographic unit over which to investigate the effect of smokefree ordinances on restaurant revenues. Technically Dane County is not smokefree; functionally, it is virtually smokefree — conservative estimates suggest that at least 90 percent of Dane County restaurant revenue is generated at smokefree restaurants.

We know that well over 80 percent of the county's restaurants are smokefree. Dane County's most significant city, Madison, as well as two smaller municipalities, Middleton and Shorewood Village, have all enacted clean-air



ordinances for restaurants. Together, these three municipalities account for 75 percent of the county's restaurants — more than 600 of the county's 800 restaurants are in these municipalities. Moreover, a 1997 survey of the 200 restaurants outside these municipalities found that 45 percent (89 restaurants) are voluntarily smokefree.[3] So, at least 85 percent of restaurants in the county are smokefree.

But the real question for this study is about *restaurant revenues*, not restaurant locations. The share of revenue generated at Dane County's smokefree restaurants must certainly exceed their share of total restaurants. Why? Because the county's highest revenue restaurants are all smokefree. These include the "high volume, low ticket" restaurants like Perkins and McDonald's both inside and out of the ordinance areas. A 1997 phone survey of all restaurants in non-ordinance areas also found that most of the restaurants that permitted smoking were small, low revenue, owner-operated establishments.[4] Moreover, the ordinance municipalities (especially Madison) hold a greater share of the county's high revenue restaurants. Thus, our conservative estimate is that at least 90 percent of Dane County's restaurant revenue is generated in smokefree restaurants.

Even so, the geographic unit, Dane County, is not 100 percent smokefree. An upward trend in restaurant revenues could be the result of flight to nonordinance areas within the county. However, we know two things that make this interpretation suspect. First, the number of voluntarily smokefree restaurants in non-ordinance areas actually grew from 4 in 1993 to 89 in 1997. If diners were actively avoiding the ordinance, one would expect the nonordinance area restaurants to become less interested in being voluntarily smokefree. The dramatic increase in voluntarily smokefree restaurants outside ordinance areas refutes the notion that diners are fleeing the ordinances in droves. If diners were seeking restaurants to smoke in, it is also unlikely that municipalities adjacent to Madison, Shorewood and Middleton, would have opted to become smokefree just after Madison had done so.

Second, while revenue trends for Madison restaurants are not available, a recent study conducted for the city of Madison shows that total employment in Madison eating and drinking establishments grew 1166 people from 1991 to 1996.[5] Compared Madison's other service industry employers, restaurants

ranked third in employment gain (ranking behind only help supply services and doctor's clinics in growth) over the 1991-96 period. This strong growth hardly supports the argument that Madison restaurants are in decline as diners flee to outlying areas.

3 1997 survey by Dane County Tobacco Free Coalition.

4 Ibid.

5 Cramer and White, Employment Trends in Madison and the Rest of Dane County, 1991-1996, Table 6a.



A second data limitation is not unique to Dane County. State data is provided for the standard industrial division "eating and drinking establishments" which includes restaurants, restaurants with liquor licenses, and taverns. Taverns are exempted from the ordinance and some restaurants may seek exemptions to the ordinance. (Restaurants with more than one-third of their income from alcohol sales may seek exemptions.) Thus, our revenue includes restaurants affected by the ordinances but establishments that are not covered as well. Again, positive revenue trends for "eating and drinking establishments" could be accounted for by strong growth in expenditures at bars and shifts in the dining population to exempted restaurants.

However, state evidence on trends in revenues for industry subgroups shows that massive shifts toward taverns are quite unlikely. In fact, in the state from 1992 to 1997, while total revenues at restaurants (both with and without liquor licenses) grew substantially, total revenues for taverns actually fell by 8 percent. Most likely, this pervasive statewide decline in tavern revenues occurred in Dane County as well. Moreover, taverns are the smallest sub-sector in the "eating and drinking establishment" industrial category. In the state, 83 percent of the $3.6 billion spent in eating and drinking establishments goes to restaurants while taverns account for just 17 percent of total restaurant expenditures.

## Restaurant Revenues Are Growing in Dane County

From 1992 to 1997, revenue of Dane County restaurants grew more rapidly than restaurant revenue gains in the rest of the state (Table 1). In 1992, before the smokefree ordinances were passed, Dane County restaurants brought in $352 million of taxable receipts. By 1997, their revenue had grown 24 percent to $437 million. Over that same period, restaurant revenues in the rest of Wisconsin grew 19 percent. If anything, this very cursory data may suggest that ordinances have been good to Dane County restaurants.

Of course, Dane County is unique in having higher population growth than the rest of the state and that growth would account for some of the increase in restaurant revenues. Dane County's population grew by 6.9 percent over 1992-97, while population grew 4.5 percent in the rest of Wisconsin. However, after accounting for population growth by investigating trends in per capita restaurant expenditures, Dane County's restaurant industry growth still outpaces the rest of the state's.



Table 1

**Restaurant Revenues and Per Capita Restaurant Expenditures, 1992 and 1997**

| | *Dane County* | | | *Rest of State* | | |
|---|---|---|---|---|---|---|
| | *1992* | *1997* | *Percent change, 1992-97* | *1992* | *1997* | *Percent change, 1992-97* |
| Restaurant revenues (millions) | $ 352 | $ 437 | 24.0 | $ 3,420 | $ 3,861 | 19.2 |
| Population | 376,989 | 402,988 | 6.9 | 4,591,235 | 4,789,310 | 4.3 |
| Restaurant expenditure per capita ($/person) | 934 | 1,084 | 16.0 | 706 | 806 | 14.2 |

In fact, Dane County residents spend more at restaurants than does the rest of the state, and that's even truer today than in the past. In 1992, the average Dane County resident spent $934 at restaurants. That figure increased by $150 to $1084 in 1997. For non-Dane Wisconsin residents, typical expenditure grew by just $100 over the same period. The growth rate in Dane County (16 percent) outpaces the per capita restaurant expenditure growth rate for the state (14.2 percent). Dane County's strong population growth is partially responsible for the county's strong restaurant revenue growth, but it is not the whole story. Dane County's per capita restaurant revenues are growing faster than the state. This data suggests that the smokefree ordinances may have even boosted restaurant revenues in the county.

## Restaurant Expenditures as a Share of Total Expenditures

When income rises, people spend more money. Because Dane County has enjoyed strong economic growth, the restaurant industry can reasonably anticipate strong revenue growth. The best method to control for Dane County's strong income growth is to look at the restaurants' share of total expenditures over time. This method also controls for population growth. Table 2 shows Dane County's and the state's strong economic performance over recent years. From 1992 to 1997, total taxable receipts (which include restaurant sales as well as all other sales) in Dane County increased by 42 percent while receipts rose 31 percent in the rest of Wisconsin. Clearly, expenditures are growing substantially in both the state and county, and Dane County's growth is stronger.



Table 2

### Restaurants' Share of Total Taxable Receipts, 1992 and 1997

| | *Dane County* | | | *Rest of State* | | |
|---|---|---|---|---|---|---|
| | *1992* | *1997* | *Percent change, 1992-97* | *1992* | *1997* | *Percent change, 1992-97* |
| Restaurant Revenues (millions) | $ 352 | $ 437 | 24.0 | $ 3,240 | $ 3,861 | 19.2 |
| Total Taxable | | | | | | |

Receipts (millions) 3,916 5,560 42.0 36,683 47,477 29.4
Restaurants' Share of
Total Taxable
Receipts
9.0 7.9 8.8 8.1

Though restaurant revenue has grown substantially, it has not grown as rapidly as total taxable receipts. As a result, in both the state and Dane County, restaurants' share of total expenditures has fallen. Before the passage of the clean air ordinances in Dane County, restaurants received 9 percent of the total taxable expenditures. By 1997, restaurants' share had fallen slightly to 8 percent. This trend, however, matches the trend in expenditure in the state. Outside of Dane County, restaurants' share of total expenditures fell from 9 to 8 percent as well.[6]

One reason that restaurants' share of total taxable receipts may have fallen is that, at some point, extra money is spent on larger items than restaurants meals. After all, the average person in Dane County is already spending more than $1000 per year at restaurants and that is 100 meals out (at $10.00 per meal) each year. There is some limit on how many more meals out per year people will purchase even as their incomes increase. At some point, another meal out or a more expensive meal is just not appealing.

Dane County's restaurants' share of total expenditures fell very slightly over 1992-97 and the decline is mirrored in the rest of the state. This pervasive trend then is unrelated to Dane's smokefree ordinances.

[6] The rest of state ratio decline, from 8.8 percent to 8.1 percent, is slightly less dramatic than the decline for Dane County, from 9.0 percent to 7.9 percent. If restaurants' share of Dane County total expenditures had fallen exactly as the state's had, down to 8.1 percent, restaurant revenues would be just 3 percent higher than they currently are. So, while the Dane County trend slightly exceeds the state, the magnitude of the difference is very slight.



## Conclusion

Prior to implementation of clean-air ordinances in Madison area restaurants, opponents claimed that restaurant revenues would drop by one-third. This paper can find no support for such a claim. Not only have Dane County restaurant revenues not dropped, they have increased more rapidly than for the state overall, both on net and on a per capita basis. And while Dane County's restaurants' share of total expenditures has dropped very slightly, it is a decline that is mirrored by the rest of the state.

Apparently, contrary to the extreme predictions, the clean air ordinances did not effect Dane County residents' interest and investment in eating out. While dining out probably became more convenient for some and less convenient for others, dining out patterns did not change substantially. Probably most significantly, smokers did not stop going out.

The smokefree ordinance has had no negative effect on restaurants. Its significant positive effects on health, especially of staff working in restaurants, have been substantial. Public health has been advanced and perhaps the economy has improved as well.

In short, there is no data to support the argument that when clean-air ordinances would undermine Dane County's restaurant industry. This study

simply confirms what other studies throughout the nation have already shown: in spite of extreme claims to the contrary, restaurant revenues do not decline because of the passage of smokefree ordinances.

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[xxii] **Author:** Scollo, M., A. Lal, A. Hyland, and S. Glantz.
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REVIEW

# Review of the quality of studies on the economic effects of smoke-free policies on the hospitality industry

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**Objective:** To compare the quality and funding source of studies concluding a negative economic impact of smoke-free policies in the hospitality industry to studies concluding no such negative impact.
**Data sources:** Researchers sought all studies produced before 31 August 2002. Articles published in scientific journals were located with Medline, Science Citation Index, Social Sciences Citation Index, Current Contents, PsychInfo, Econlit, and Healthstar. Unpublished studies were located from tobacco company websites and through internet searches.
**Study selection:** 97 studies that made statements about economic impact were included. 93% of the studies located met the selection criteria as determined by consensus between multiple reviewers.
**Data extraction:** Findings and characteristics of studies (apart from funding source) were classified independently by two researchers. A third assessor blind to both the objective of the present study and to funding source also classified each study.
**Data synthesis:** In studies concluding a negative impact, the odds of using a subjective outcome measure was 4.0 times (95% confidence interval (CI) 1.4 to 9.6; p = 0.007) and the odds of not being peer reviewed was 20 times (95% CI 2.6 to 166.7; p = 0.004) that of studies concluding no such negative impact. All of the studies concluding a negative impact were supported by the tobacco industry. 94% of the tobacco industry supported studies concluded a negative economic impact compared to none of the non-industry supported studies.
**Conclusion:** All of the best designed studies report no impact or a positive impact of smoke-free restaurant and bar laws on sales or employment. Policymakers can act to protect workers and patrons from the toxins in secondhand smoke confident in rejecting industry claims that there will be an adverse economic impact.

Smoke-free workplace policies reduce both exposure to secondhand tobacco smoke and cigarette consumption.[1–3] Smoke-free restaurants and bars similarly reduce exposure to tobacco smoke toxins among hospitality workers and patrons but also represent a serious business threat to the tobacco industry.

In California in 1987, a 100% smoke-free restaurant ordinance in Beverly Hills was rolled back, partly in response to claims that the ordinance was responsible for reducing restaurant revenues by 30%, claims which later turned out to be unsubstantiated.[4] Since then, tobacco companies and allied groups have routinely predicted that enactment of such legislation would severely impact restaurant and bar sales and employment.[5–9] Health advocates, by contrast, have presented studies indicating that no such adverse effects actually occurred.[10]

Policymakers are typically presented with a large amount of conflicting material, with evidence ranging from anecdotes about individual businesses[11] to scientific studies analysing objective information collected independently across an entire hospitality sector.[12] Such data are often confusing to interpret and it is difficult for policymakers to reach an evidence based conclusion. In their case study of deliberations by the Maryland Occupational Safety and Health Advisory Board, Montini *et al* demonstrate that those opposing proposed smoke-free workplace regulations lodged twice the number of submissions as those supporting it, but that evidence from opponents was substantially less scientifically rigorous than evidence provided by supporters of workplace smoking regulations.[13] Similar findings were observed in relation to the Californian Environmental Protection Agency's risk assessment of secondhand smoke,[14] and in Maryland and Washington hearings on proposed clean indoor air regulations.[15] Bero and her colleagues have repeatedly called on advocates to more forcefully draw to legislators' attention the superior scientific quality of the evidence base relied upon by public health groups in calling for clean air legislation.[13–15]

This paper compares the quality of evidence and conclusions about the economic impact of smoke-free laws on the hospitality industry based on the type of data used, how the studies are designed, analysed and interpreted, and the funding source.

## METHODS

### Data source

Studies included in this analysis are listed in a comprehensive summary produced by the VicHealth Centre for Tobacco Control.[16] Centre researchers attempted to locate all studies produced in English before 31 August 2002 that purported to assess the economic impact of smoke-free policies in the hospitality industry. Peer reviewed articles were located with Medline, Science Citation Index, Social Sciences Citation Index, Current Contents, PsychInfo, Econlit, and Healthstar using the terms smok* and restaurants, bars, hospitality, economic, regulation and law. Unpublished studies were also included in the analysis. These studies were located from a compilation by the Alberta Tobacco Control Centre,[16] by a request to members of the International Union Against Cancer's International Tobacco Control Network (GLOBALink), and an examination of hospitality industry websites and the websites of tobacco companies based in major English speaking countries, including the Philip Morris "Options" website, www.pmoptions.com . The researchers also conducted an internet search with the Google search engine www.google.com , using the terms "smok* bans" and "restaurants" or "bars", limited by the terms "economic impact" or "study".

### Study selection

Studies included measured changes in sales, employment, numbers of establishments, bankruptcy data, public reports of intentions about or recent changes in patronage, spending or time spent dining, proprietors predictions or perceptions of sales changes and costs and estimated numbers of tourists. Studies were excluded where these made no explicit or implicit attempt to quantify the economic impact of smoking restrictions. Studies assessing opinions about smoke-free policy were included where the study included a question asking specifically whether people would attend venues more or less frequently were such policies to be introduced.

Ninety three per cent of the studies located (97/104) met the selection criteria as determined by consensus between multiple reviewers.

## DATA EXTRACTION

Findings and characteristics of studies (apart from funding source) were classified independently by two researchers in most cases several months before the start of the study (MS and AL). Both assessors had tertiary qualifications in behavioural science and economics. A third assessor, (LH) a postgraduate psychology student blind to both the objective of the present study and to the funding source, also classified each study.

We used Siegel's criteria[12] to judge study quality: use of objective data (for example, tax receipts or employment statistics); inclusion of all data points after the law was implemented and several years before; use of regression or other statistical methods that control for secular trends and random fluctuation in the data; and appropriate control for overall economic trend. The more criteria a particular study met, the more certain one can be about the validity of results.

An outcome measure was deemed "objective" if it was based on data collected routinely by an independent agency covering the periods both before and after the smoke-free policy was in force. Objective measures included: sales figures provided for the purposes of taxation assessment; employment figures provided to government agencies generally for insurance purposes; and numbers of new or existing establishments based on business permit applications or registrations to the government agency that issues such permits, and bankruptcy data.

Unverifiable predictions of future changes or estimates of recent changes in patronage or spending were deemed "subjective". Subjective measures included anecdotal reports and self report data collected in polls of, or interviews with, patrons or owners of restaurants, bars or similar businesses, conducted either before or after the policy was put in place.

Another indicator of the quality of a study is whether it has been subject to peer review. The scientific quality of original research on secondhand smoke published in peer reviewed journals is superior to that in non-peer reviewed publications in terms of study design, reporting, and evaluation.[17] A study was deemed to have been peer reviewed if it was an article published in an academic journal.

Studies were classified as indicating or not indicating a negative economic effect based on their stated conclusions about the impact or potential impact on employment or profitability of the various sections of the hospitality industry at issue. All three raters agreed on the conclusions in all but one of the 97 studies. The Masotti study[18] was classified as negative, as per the conclusion of two of the three raters. Two studies[19 20] did not draw conclusions; we included them in the analysis based on their face-value findings.

Funding sources for each paper were noted after completion of all the other classification tasks. Funding was determined from acknowledgments in the studies (obscured on copies of papers classified by the third rater). When the source was not clearly disclosed, authors were contacted where possible and attempts were made to determine whether authors or sponsoring agencies had ever received financial support from a tobacco company or affiliated group. Searches were undertaken of previously secret tobacco industry documents made available as part of settlement agreements between tobacco companies the US attorneys general[21 22] (accessible through www.tobaccoarchives.com ).

### Analyses

We used contingency tables and odds ratios to compare studies concluding a negative impact with those not concluding a negative impact.

## DATA SYNTHESIS

A total of 97 reports were located.[5 16–20 23–115]. Studies covered numerous local jurisdictions in 31 state or provincial areas, in eight countries. Thirty four of the studies examined the impact of smoke-free policies for drinking establishments, and 90 the impact of smoke-free policies for restaurants. Two studies examined the impact for recreational venues. One examined the impact of smoke-free restaurants on hotels and another on overall tourism.

### Study quality

Of the 97 studies, 38% (37/97) used objective outcome measures and 25% (24/97) were peer reviewed. Twenty one studies met Siegel's four criteria for methodological quality, representing 57% (21/37) of the studies that used objective measures. By contrast, 98% (59/60) of the studies using only subjective outcome measures met none of the criteria. The odds of peer reviewed articles meeting all four criteria was 5.33 times that of non-peer reviewed studies (95% confidence interval (CI) 1.9 to 15.1; $p = 0.002$).

### Funding source

Of the 97 studies, 32% (31) were funded either by the tobacco industry or a group known to have received funding from a tobacco company or tobacco industry ally.[19 20 23 57 59–61 80–83 84 86–97 103 107 108 114] Four studies did not disclose funding source, but were conducted by consultants or organisations known to have a connection with the tobacco industry.[18 31 58 85] For three of these studies, there was strong evidence of collaboration between tobacco companies and the study authors.[31 58 85]

The two studies by consultants where close ties with the tobacco industry had been established and those funded by organisations known to have received funding from the tobacco industry were included with the tobacco industry funded studies, yielding 31 tobacco industry supported studies. The funding source was treated as missing for six studies[18 27 99 104–106] because no data on funding source could be located.

The other 60 studies[5 24–26 28–30 32–56 62–79 98 100–102 109–113 115] were funded either by government, health related organisations or independent market research organisations.

All the studies used in this analysis is summarised in tables 1 and 2.

### Study quality and funding

The methodological quality of the industry sponsored studies was significantly lower ($p < 0.001$) than the non-industry studies (table 3). Only one of the 31 tobacco industry supported studies (3%) has been published in a peer reviewed journal compared to 38% (23/60) of the non-industry funded studies. None (0/31) of the tobacco industry supported studies met all of Siegel's[12] four methodological quality criteria. Indeed, 84% (26/31) of the industry supported studies met none of the criteria. By contrast, 35% (21/60) of the studies not supported by the tobacco industry met all of Siegel's[12]

**Table 1** Studies using objective measures to assess economic impact of smoke-free policies in the hospitality industry

| | Control for economic conditions | | Do not control for economic conditions | |
|---|---|---|---|---|
| | **No effect, or positive effect** | **Negative effect** | **No effect, or positive effect** | **Negative effect** |
| **Studies funded from sources other than the tobacco industry** | | | | |
| Taxable sales receipts | Bartosch and Pope (1995)[34]; **Bartosch and Pope (1999)[35]**; **Bartosch and Pope (2002)[98]**; Bialous and Glantz (1997)[36]; **Bartosch and Pope (1999)[5]**; *Dresser (1999)[40]; **Glantz and Charlesworth (1999)[5]**; **Glantz and Smith (1994)[42]**; **Glantz and Smith (1997)[44]**; Glantz (2000)[43]; **Goldstein and Sobel (1998)[45]**; Hayleit and Huang (2000)[30]; **Huang et al (1995)[46]**; ***Hyland et al (1999)[48]**; **Hyland (2002)[25]**; Maroney et al (1994)[51]; Pacific Analytics (2001)[52]; Pope and Bartosch (1997)[53]; **Sciacca and Ratliff (1998)[54]**; Styring (2001)[29]; Taylor Consulting (1993)[55]; **Wakefield et al (2002)[56]** | | California State Board of Equalization (1998)[37]; *City of Boulder (1996)[38]; Fletcher (1998)[41] | |
| Sales data other | | | *Dresser et al (1999)[39] | |
| Employment levels | *Hild et al 2001[113]; ***Hyland and Cummings (1999)[47]**; *Hyland and Tuk (2001)[50]; **Hyland et al (2000)[49]**; Bourns and Malcomson[33] | | | |
| Number of establishments | ***Hyland and Cummings (1999)[47]** | | | |
| Bankruptcy data | Bourns and Malcomson[33] | | | |
| **Studies for which funding is unknown** | | | | Pubco 2002[27] |
| Sales data other | | | | |
| **Studies conducted by organisations or consultants with links to the tobacco industry around the time of the study** | | | | |
| Taxable sales receipts | | | | *Lilley et al (1996)[61] *Masotti et al (1991)[18]† |
| **Studies funded by tobacco companies or industry groups supported by the tobacco industry** | | | | |
| Taxable sales receipts | | | | *Laventhol et al (1990)[58] |
| | | | | Applied economics (1996)[57] |
| Sales data other | | | | *Lilley et al (1999)[59]; *Lilley et al (1996)[60] |
| Employment levels | | | | *Lilley et al 1999[59] |
| Number of establishments | | | | |

Bold type = peer reviewed.
*Use discrete rather than continuous data before and after the introduction of policies.
†Only weak evidence of connection with the tobacco industry.

criteria[5 25 30 33–36 42–46 48 49 51–56 98] ($p < 0.001$). Eleven of these non-industry funded studies have been published in peer reviewed journals.

### Study quality and conclusion

Table 4 sets out the findings of those studies meeting each of various indicators of high quality: using objective outcome measures; meeting this and Siegel's other three criteria for quality; being funded by a source clearly independent of the tobacco industry; and being peer reviewed.

None of the 21 studies that met all four of Siegel's[12] quality criteria reported a negative impact (table 4). In fact, four of the studies report a positive impact on taxable sales receipts of restaurants, bars, hotels, or tourism.[5 36 43 44]

Only a handful of studies based on objective data conclude a negative impact. None of these meets more than one of Siegel's other three criteria for methodological quality. Only one peer reviewed study concluded a negative impact.[44] This study relied on subjective data and was funded by a tobacco company.

Table 5, conversely, shows, for those studies concluding negative impact, whether each of the various quality criteria was met. Once again, studies concluding a negative impact rarely included an objective measure and were almost never peer reviewed.

In studies concluding a negative impact, the odds of using only a subjective measure was 4.0 times (95% CI 1.4 to 9.9; $p = 0.007$) and the odds of being peer reviewed was 20 times (95% CI 2.6 to 166.7; $p = 0.004$) that of studies concluding no such negative impact (table 6)

### Funding source and conclusion

There was a significant association of tobacco industry support with negative conclusions of the study ($p < 0.001$) (table 6). Ninety four per cent (29/31) of the tobacco industry supported studies concluded that there was or would be a negative economic impact of implementing a smoke-free policy. The odds ratio for a negative conclusion associated with tobacco industry support was infinite because none of the 60 non-industry funded studies concluded a negative economic impact.

## DISCUSSION

Lower quality studies were much more likely to conclude smoke-free regulations adversely impact the hospitality industry, and weaker studies were much more likely to be

**Table 2** Studies using subjective measures to assess the economic impact of smoke-free policies in the hospitality industry

| | No effect or positive effect | Negative effect |
|---|---|---|
| **Studies funded from sources other than the tobacco industry** | | |
| Public self reported intentions or actual patronage of restaurants/bars | Allen and Markham (2001)[100]; August (2000)[62]; **Biener and Fitzgerald (1999)[65]**; **Biener and Siegel (1997)[24]**; **Corsun et al (1996)[55]**; Decima Research (2001)[67]; Decima Research (2002)[32]; Dresser *et al* (1999)[30]; Field Research (1998)[70]; Field Research (1997)[69]; **Hyland and Cummings (1999)[71]**; Lam (1995)[73]; McGhee 2002 [24]; Miller and Kriven (2002)[28]; Miller and Kriven (2002)[26]; Shapiro 2001[112]; Styring (2001)[29]; **Wakefield *et al* 1999**[101] | |
| Proprietor predictions/ perceptions of sales changes | Allen and Markham (2001)[100]; **Cremieux and Oulette (2001)[66]**; Dresser *et al* (1999)[30]; Edwards (2000)[68]; Huron County Health Unit 1999[111]; **Hyland and Cummings(1999)[72]‡**; Jones *et al* (1999)[113]; Markham and Tong (2001)[74]; Parry *et al* (2001)[78]; **Sciacca and Eckram (1993)[75]**; **Sciacca (1996)[76]**; **Stanwick (1998)[77]**; The Conference Board of Canada (1996)[79]; Yorkshire Ash (2001)[102] | |
| Proprietor predictions/perceptions of cost | **Cremieux and Oulette (2001)[66]**; The Conference Board of Canada (1996)[79]; Douglas County CHIP (2001)[110] | |
| Estimated numbers of overseas visitors | Hodges and Maskill (2001)[109] | |
| **Studies for which funding source is unknown** | | |
| Proprietor predictions/ perceptions of sales changes | | Economists Advisory Group (1998)[105]; Pubco (2001)[99]; The Publican (2001)[106] |
| **Studies conducted by organisations or consultants with some links to the tobacco industry around the time of the study** | | |
| Proprietor predictions/ perceptions of sales changes | Masotti *et al* (1991)[18]† | CCG 1996[104]; Charlton Research (1994)[83] |
| **Studies funded by tobacco companies or industry groups supported by the tobacco industry** | | |
| Public self reported intentions or actual patronage of restaurants/bars | Auspoll (2000)[19]; Decima research (1988)[20] | Fabrizio *et al* (1995)[107]; KPMG Barents (1997)[23]; Marlow (1999)[87]; National Restaurant Association (1993)[91]; Sollars *et al* (1999)[95] |
| Public self reported spending/time spent | | Fabrizio *et al* (1995)[107]; Martin Associates (1999)[89] |
| Proprietor predictions/ perceptions of sales changes | | Advantage Marketing Info (1997)[80]; Applied Economics (1996)[81]; CCG 1995[103]; Chamberlain Research Consultants (1998)[82]; **Dunham and Marlow (2000)[84]**; EMRS 2001 [114]; Fabrizio *et al* (1996)[108]; Gambee (1991)[85]; KPMG Peat Marwick (1998)[86]; KPMG (2001)[21]; Marlow (1999)[87]; Marlow (1998)[88]; Mason-Dixon Market Research (1996)[90]; Price Waterhouse LLP (1993)[92]; Price Waterhouse LLP (1995)[93]; Roper Starch (1996)[94]; The Craig Group Inc (1998)[96]; The Eppstein Group (1997)[97] |
| Proprietor estimates of impact on employment | | Advantage Marketing Info (1997)[80]; Applied Economics (1996)[81]; Fabrizio *et al* (1996)[108]; Marlow (1998)[88]; Price Waterhouse LLP (1993)[93]; Roper Starch (1996)[94]; Sollars *et al* (1999)[95]; Chamberlain Research Consultants (1998)[82]; The Eppstein Group (1997)[97] |
| Proprietor predictions/perceptions of cost | | Sollars *et al* (1999)[95] |

Bold type = peer reviewed; underline = study based on estimates of predicted changes rather than estimates of actual changes.
*Not a random survey.
†Only weak evidence of connection with the tobacco industry.
‡Control for economic trends.

funded by the tobacco industry. In addition, the industry studies were less likely to be published in the peer reviewed literature. Almost all (94%) of industry supported studies, compared to none of the studies funded by sources other than the tobacco industry, claimed a negative economic impact.

These results are consistent with a similar linkage between tobacco industry funding and conclusions in reviews of the effects of secondhand smoke.[115] Barnes and Bero[116] identified 106 reviews of the relation between secondhand smoke and disease. Thirty seven per cent of these reviews concluded that passive smoking was not harmful to health; 74% of these reviews were written by authors with tobacco industry affiliations. Among reviews written by individuals with no industry affiliations, only 13% (10/75) reached the conclusion that passive smoking is not harmful to health. In logistic regression analyses controlling for article quality, peer review status, article topic, and publication year, the only factor associated with concluding that passive smoking is not harmful was whether an author was affiliated with the tobacco industry (odds ratio 88.4; $p < 0.001$).

**Table 3** Quality of studies supported by the tobacco industry compared with those that are not

| Percent of studies . . . | Industry supported studies | Non-industry studies | Odd ratios (95% CI) | p Value |
|---|---|---|---|---|
| Including an objective outcome measure | 18% (5/31) [57-61] | 50% (30/60) [5 25 29 30 33-36 98 113] | 5.2 (1.7 to 15.4) | 0.003 |
| Meeting all four methodological criteria | 0% (0/31) | 35% (21/60) [5 25 29 30 34-36 42-46 48 49 51-56 98] | Infinite | |
| Subject to peer review | 3% (1/31) [84] | 38% (23/60) [5 35 42 44-49 54 56 63-66 71 72 75-77 98 101 115] | 18.5 (2.4 to 142.9) | 0.005 |

CI, confidence intervals.

**Table 4** Findings of higher quality studies

| | Conclusion of negative impact? | | $\chi^2$ | p Value |
|---|---|---|---|---|
| | Yes | No | | |
| Meeting all four Siegel criteria (n=21) | 0% (0/21) | 100% (21/21) [5 25 29 30 34-36 42-46 48 49 51-56 98] | 15.13 | 0.000 |
| Including an objective measure (n=37) | 19% (7/37) [18 27 57-61] | 81% (30/37) [5 25 29 30 33-36 98 113] | 7.64 | 0.006 |
| Funded by source clearly independent of the tobacco industry (n=60) | 0% (0/60) | 100% (60/60) [5 24-26 28-30 32-36 62-79 98 100-102 109-113 115] | 82.38 | 0.000 |
| Peer reviewed (n=24) | 4% (1/24) [84] | 96% (23/24) [5 35 42 44-49 54 56 63-66 72 75-77 98 101 115] | 14.09 | 0.000 |

**Table 5** Quality of studies among those that reported a negative impact

| | Yes | No | $\chi^2$ | p Value |
|---|---|---|---|---|
| Meeting all four Siegel criteria | 0% (0/35) | 100% (35/35) [18 23 27 31 57-61 80-97 99 103-108 114] | 15.13 | 0.000 |
| Including an objective measure | 20% (7/35) [18 27 57-61] | 80% (28/35) [23 31 80-97 99 103-108 114] | 7.64 | 0.006 |
| Funded by source clearly independent of tobacco industry | 0% (0/35) | 100% (35/35) [18 23 27 31 57-61 80-97 99 103-108 114] | 88.80 | 0.000 |
| Peer reviewed | 3% (1/35) [84] | 97% (34/35) [18 23 31 57-61 80-97 99 103-108 114] | 14.09 | 0.000 |

**Table 6** Odds ratios for indicators of lower quality among studies with negative conclusions compared to studies not concluding a negative impact

| | % finding a negative outcome | % not finding a negative outcome | Odds ratios (95% CI) | p Value |
|---|---|---|---|---|
| Including only subjective outcome measures | 80% (28/35) [23 31 80-97 99 103-108 114] | 52% (32/62) [19 20 24 26 28 32 62-79 100-102 109-112 115] | 4.0 (1.4 to 9.9) | 0.007 |
| Funded by the tobacco industry or a group supported by the tobacco industry | 94% (29/31) [25 31 57-61 80-97 103 107 108 114] | 4%(2/62) [19 20] | Infinite | 0.001 |
| Not being peer reviewed? | 97% (34/35) [18 57-61 80-83 85-97 99 103-108 114] | 63% (39/62) [19 20 24-26 28-30 32-34 36-41 43 50-53 55 62 67-70 73 74 76 79 100 102 109-113] | 20 (2.6 to 166.7) | 0.004 |

The possibility of publication bias always exists. It is possible that studies by those sympathetic to public health goals that detect a negative impact would be less likely to be submitted for publication. On the other hand those funded by the tobacco industry would be similarly unlikely to release studies detecting no negative impact. We have made every effort to identify all studies done on the effects of smoke-free laws and regulations on the hospitality industry. The fact that the tobacco industry has a strong motivation to publicise all negative studies adds to our confidence that we have not missed a substantial number of studies concluding a negative economic impact.

Siegel's criteria are a valuable tool for assessing the quality of studies on the economic impact of smoke-free policies in the hospitality industry. Our findings suggest that policymakers can make a quick preliminary assessment of study quality by asking three questions:

(1) Was the study funded by a source clearly independent of the tobacco industry?

(2) Did the study objectively measure what actually happened, or was it based on subjective predictions or assessments?

(3) Was it published in a peer reviewed journal?

Of the 35 studies on this topic published that concluded a negative impact, none have been funded by a source clearly independent of the tobacco industry, and none have both used an objective measure and been peer reviewed. In fact, 80% of these studies passed none of these basic tests of quality. With all 21 of the well designed studies finding that smoke-free restaurant and bar laws had no negative impact on revenue or jobs, policymakers can act to protect workers and patrons from the toxins in secondhand smoke confident in rejecting predictions that there will an adverse economic impact.

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ANRF AMERICAN NONSMOKERS' RIGHTS FOUNDATION
Defending your right to breathe smokefree air since 1976

# Summary of 100% Smokefree State Laws and Population Protected by State and Local Laws

*January 3, 2006*

**Only municipalities and states with ordinances or regulations that do not allow smoking in attached bars or separately ventilated rooms and do not have size exemptions are listed here.**

| Type of Law | Population Covered by Local and State Laws | % of Population Covered by Local and State Laws |
|---|---|---|
| Workplaces[1] and/or Restaurants[2] and/or Bars[3] | 110,894,372 | 39.4% |
| Workplaces[1] and Restaurants[2] and Bars[3] | 38,422,651 | 13.7% |
| Workplaces[1] | 70,823,656 | 25.2% |
| Restaurants[2] | 103,205,073 | 36.7% |
| Bars[3] | 78,910,366 | 28.0% |
| Workplaces[1] and Restaurants[2] | 57,901,286 | 20.6% |
| Restaurants[2] and Bars[3] | 78,910,366 | 28.0% |

| State Law: | Enactment Date: | Provisions and Effective Date: | Population |
|---|---|---|---|
| California | July 1994 | Restaurants[2] (1/1/95) & Bars[3] (1/1/98) | 33,871,648 |
| Utah | 1994 | Restaurants[2] (1/1/95) | 2,233,169 |
| South Dakota | February 2002 | Workplaces[1] (7/1/02) | 754,844 |
| Delaware | May 2002 | Workplaces[1], Restaurants[2] & Bars[3] (11/27/02) *comprehensive* | 783,600 |
| Florida | November 2002 | Workplaces[1] & Restaurants[2] (7/1/03) | 16,396,515 |
| New York | March 2003 | Workplaces[1], Restaurants[2] & Bars[3] (7/24/03) *comprehensive* | 19,011,378 |
| Connecticut | May 2003 | Restaurants[2] (10/1/03) & Bars[3] (4/1/04) | 3,425,074 |
| Maine | June 2003 | Restaurants[2] & Bars[3] (1/1/04) | 1,286,670 |
| Idaho | April 2004 | Restaurants[2] (7/1/04) | 1,293,953 |
| Massachusetts | June 2004 | Workplaces[1], Restaurants[2] & Bars[3] (7/5/04) *comprehensive* | 6,349,097 |
| Rhode Island | June 2004 | Workplaces[1], Restaurants[2] (3/1/05) & Bars[3] (3/31/05) *comprehensive* | 1,048,319 |
| North Dakota | April 2005 | Workplaces[1] (8/1/05) | 642,200 |
| Vermont | June 2005 | Restaurants[2] & Bars[3] (9/1/05) | 608,827 |
| Montana | April 2005 | Workplaces[1] & Restaurants[2] (10/1/05), *Bars[3] (9/1/2009)* | 902,195 |
| Washington | November 2005 | Workplaces[1], Restaurants[2] & Bars[3] (12/8/05) *comprehensive* | 5,894,121 |
| **US POP** | | | 281,421,906 |

Total = 15

*All population figures are from the United States Census 2000*

[1]Includes both public and private non-hospitality workplaces, including, but not limited to, offices, factories, and retail stores.
[2]Includes any attached bar in the restaurant.
[3]Includes freestanding bars without separately ventilated rooms.

Altogether, there are 6,011 municipalities covered by either local or state 100% smokefree laws in at least one of the three main categories (workplaces, restaurants, and bars). Since some have 100% smokefree coverage in more than one category, ***the numbers are not mutually exclusive.*** Due to the possibility of overlap, it can be confusing to understand what each of the figures on our lists mean. ***Please give us a call if you need help determining the population with a particular type of 100% provision, or a particular combination of 100% provisions.***



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## Overview List – How many Smokefree Laws?

Since the 1970s, the nonsmokers' rights movement has made significant progress towards clean indoor air. As of January 3, 2006, there are 2,129 municipalities with laws in effect that restrict where smoking is allowed. A state or local municipality can pass a Workplace*, Restaurant**, or Bar law, or any combination of the three. We hope that the following concise statements are helpful.

### As of January 3, 2006:

**Local**

- A total of **2,129** municipalities in the United States have local laws in effect that restrict where smoking is allowed.
- A total of **440** of these 2,129 municipalities have a 100% smokefree provision in effect at the local level – either in workplaces, **and/or** restaurants, **and/or** bars.
- There are **327** municipalities with a local law in effect that requires 100% smokefree workplaces.
- There are **278** municipalities with a local law in effect that requires 100% smokefree restaurants.
- There are **205** municipalities with a local law in effect that requires 100% smokefree bars.
- There are **165** municipalities with a local law in effect that requires **both** workplaces **and** restaurants be 100% smokefree.
- There are **203** municipalities with a local law in effect that requires **both** restaurants **and** bars be 100% smokefree.
- There are **124** municipalities with a local law in effect that requires workplaces, restaurants, **and** bars be 100% smokefree.

Note: Since some of the above have 100% smokefree coverage in more than one category, ***the numbers are not mutually exclusive.***

**State and Local**

- Across the United States, **6,010** municipalities are covered by a 100% smokefree provision in workplaces, **and/or** restaurants, **and/or** bars, by **either** a state or local law, representing **39.4%** of the US population.
- There are **33** states with local laws in effect that require 100% smokefree workplaces and/or restaurants **and/or** bars.

**State**

- There are **15** states with state laws in effect that require 100% smokefree workplaces **and/or** restaurants **and/or** bars:

**California:** Restaurants and Bars
**Connecticut:** Restaurants and Bars
**Delaware:** Workplaces, Restaurants, and Bars
**Florida:** Workplaces, and Restaurants
**Idaho:** Restaurants
**Maine:** Restaurants and Bars
**Massachusetts:** Workplaces, Restaurants, and Bars
**Montana:** Workplaces and Restaurants
**New York:** Workplaces, Restaurants, and Bars
**North Dakota:** Workplaces
**Rhode Island:** Workplaces, Restaurants, and Bars
**South Dakota:** Workplaces
**Utah:** Restaurants
**Vermont:** Restaurants and Bars
**Washington:** Workplaces, Restaurants, and Bars

**Note: The following state law has been enacted but is not yet in effect:**

- **Montana** enacted a 100% smokefree bar law, which is scheduled to go into effect October 1, 2009.

*Includes both public and private non-hospitality workplaces, including, but not limited to, offices, factories, and warehouses.
**Includes any attached bar in the restaurant.



[LS-08]

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